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WEAK AND OR NON-EXISTENT FARMER-RESEARCH-EXTENSION LINKAGE STRUCTURES, A CAUSE FOR CONCERN: THE NYANGA DISTRICT PERSPECTIVE, ZIMBABWE.

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ABSTRACT

The purpose of the study was to establish the current state of public research-extension-farmer linkages in Nyanga district of Zimbabwe. The target sample population was comprised of 150 communal farmers (N=150) from three clusters in Nyanga districts, as well as 12 extension officers (N=12) and six research officers (N=6). The study revealed that evaluation of the frequency of communication and communication channels used by the three stakeholders does not suggest or support any proper structural linkages. The study also revealed very weak farmers-extension linkages and non-existent farmer-research linkages as well as research-extension linkages. There is a general lack of understanding of the concept of linkage amongst research and extension officers as well as the farmers.

Keywords: structural linkages, extension, extension officers, research officers, farmers

1. INTRODUCTION

The concept of institutional linkages implies that a communication and a working relationship is established between two or more organisations pursuing commonly shared objectives in order to have regular contact and improved productivity. Havelock (1986) contends that linkage is a term used to indicate that two systems are connected by messages so as to form a greater system. He argues that if the barriers between two systems are permeable enough for messages and responses to flow out of each to the other, then a link has been created between the two. From this viewpoint, agricultural research and extension services are two systems which are linked by information flow and feedback (Agbamu, 2000). Agricultural research and extension organisations in Zimbabwe and in many other countries are established as instruments for promoting agricultural development, and that effective linkages between these organisations help them to achieve their goals. These institutions were strategically set up in different geographical areas to serve in identifying research problems and provide solutions that are well adapted to the local conditions.

The continuous flow of agro-technologies will definitely play important roles in identifying research problems, adapting the recommendations to local conditions and providing feedback to researchers about the innovations that have been developed. Effective communication links between researchers, extensionists and farmers are vital in the modification of technological recommendations and in initiating further research; such links enable new technologies and management practices to be suited to local ecological conditions (Agbamu, 2000). However there always seems to be a lack of close working relationship between national agricultural research and extension organizations, and with different categories of farmers and farmer organizations (Swanson, 2004). Swanson (2004) further postulated that research and

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extension organizations generally compete over the same scarce government resources and, frequently, leaders of these institutions do not see themselves as part of a broader system. Instead, they try to increase the flow of resources coming to their respective institutions and to solve day-to-day management problems, rather than ensuring that their respective organizations contribute to the broader goal of getting improved agricultural technology to all major categories of farmers, not as separate entities but through collaborative, participatory, inclusive, and sustainable means.

It is disheartening to note that some leaders and staff of many research and extension organizations do not appreciate the important roles that farmers and farmer organizations can play, both in disseminating technology and, through effective feedback mechanisms, that are useful in setting priorities and improving programme relevance (Swanson, 2004). Farmers are still regarded as mere consumers of already made packages which are made without their concern and input, with most researchers still regarding extension officers as agents for the transfers of their findings to users. This was also highlighted by Rolling (1995) who asserts that if someone asks any agricultural researcher how extension works, the likely response would be "extension transfers the findings of agricultural research to users". This study is based on the premise that public agricultural research and extension organisations are established as instruments for promoting agricultural development. Research information should be a product of participative and collaborative efforts of research, extension officers and farmers and that effective linkage between these three role players should work as a tool to ensure that this is achieved. Farmers should equally participate in research and extension activities in order to improve on sustainable agricultural production and ultimately, their living standards.

2. PROBLEM STATEMENT

Research work in Zimbabwe and the world over have pointed out the importance of viable institutional linkages for effective agricultural development. Establishment of strong linkages among public agricultural research and extension services providers and the farmers as well as the promotion of participatory extension approaches is key to sustainable agricultural development. Pilot studies in some districts of Masvingo Province in Zimbabwe have shown the critical role played by effective farmer participation and well-coordinated institutional linkages among researchers, extensionists and the farmers. Results from the pilot studies were extensively well published in the country with the Department of AGRITEX adopting most of the recommendations and pledging to apply them in all the extension activities throughout the country (Hagman, *et al*, 1998). Despite all the recommendations and the pledges for adoption, the reality on the ground shows that there are no effective institutional linkages that are in existence in most parts of the country especially among public agricultural services providers and the rural subsistence farmers.

3. AIMS AND OBJECTIVES OF THE STUDY

The aim of the study was to explore the existence of any structural linkage structures among the following role players; public extension service providers and researchers from Nyanga Experiment Station (NES) as well as the subsistence farmers who live within the 30km radius from the research station.
Specific objective:

- To identify the existence, strengths and weakness (if any), of institutional linkages among research, extension and farmers, (who live close to NES).

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4. RESEARCH METHODOLOGY

The study was conducted in Nyanga district which lies in the eastern part of the country in the Manicaland province of Zimbabwe and it is divided into 30 administrative wards. The farmer respondents were sample from Sedze cluster in ward 19 as well as Weaving and Manjoro clusters from ward 22. A total of 12 extension officers and six research officers from Nyanga experimental station were also involved in this study. The systematic sampling procedure was employed in selecting farmer respondents from the three clusters.

Two similar sets of questionnaires were used to collect data from farmers as well as research and extension officers. The two sets of questionnaires were analysed using SAS Enterprise Guide, version: 43 (4.3.0.11123). The data was coded and captured followed by cleaning. Fisher's exact tests were carried out in the analysis of the greater percentage of the data while the Kruskal-Wallis tests were carried out in the analysis of a few data parameters.

5. RESULTS AND DISCUSSION

Structural linkages are difficult to measure in any organisation, however pointers like meetings and communication channels may be used to explore how well any institutions are linked.

5.1 Meetings between farmers, research and extension officers

The frequency of meetings alone can be used to measure the state of linkage between any two or more separate organisations. The outcomes of such meetings can further provide some insights into the state of linkages between two or more organisations too. It is against this background that the author sorts to find out how well these three different institutions are linked by analysing their frequency of meetings. The farmers' response to the question on meetings is shown in Table 1 below.

Table 1: Farmers response to the frequency of meetings between them and the research- and extension officers.

	Extensionists								**Researchers**							
	Cluster								**Cluster**							
Frequency of meeting	**Sedze**		**Weaving**		**Manjoro**		**Grand Total**		**Sedze**		**Weaving**		**Manjoro**		**Grand Total**	
	n	%	n	%	n	%	**N**	**%**	n	%	n	%	n	%	**N**	**%**
Never met before	0	0	0	0	0	0	**0**	**0**	60	100	39	87	20	44	**119**	**79.33**
Once a week	54	90	40	88.9	39	86.66	**133**	**89**	0	0	0	0	3	7	**3**	**2.00**
Every fortnight	2	3.33	2	4.44	2	4.44	**6**	**4**	0	0	2	4	5	11	**7**	**4.67**
Once a month	3	5.00	2	4.44	4	8.90	**9**	**6**	0	0	3	7	17	38	**20**	**13.33**
Once in 2 months	1	1.67	1	2.22	0	0.00	**2**	**1**	0	0	1	2	0	0	**1**	**0.67**
Once in 6 months	0	0	0	0	0	0	**0**	**0**	0	0	0	0	0	0	**0**	**0.00**
Total	**60**	**100**	**45**	**100**	**45**	**100**	**150**	**100**	**60**	**100**	**45**	**100**	**45**	**100**	**150**	**100**

A total of 54 farmer respondents (90%) from Sedze, 40 farmer respondents (88.89%) from Weaving and 39 farmer respondents (86.67%) from Manjoro indicated that they meet once a week for some farming business with their extension workers(EW). However there was highly significant differences (Fisher's exact test P=0.0000) within the three clusters in the frequency of meeting between farmers and researchers from NES, (Table 5.1). The number of farmer respondents who indicated that they have never met for business with researchers

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from Sedze (100%) and Weaving (87%) was significantly higher (Fisher's exact test P=0.0000) than those from Manjoro (44%). On the other hand the number of farmer respondents who indicated that they met once a month for business with researchers from Manjoro (38%) was significantly higher than those from Sedze (0%) and Weaving (7%). However the overall response is that more (79.33%) farmer respondents have never met with researchers from NES for any farming business (Table 1).

A total of eight extension workers (67%) and four research officers (80%) revealed that they meet once a week with their farmers and a Fisher's exact test P=0.3121 did confirmed that there is no significant differences in research-farmer and extension-farmer meetings. However the farmers do not share the same view as the researchers on the same subject (Table 5.1). The outcome of the survey indicated a higher farmer-extension than farmer-research contacts. This could be resulting from the fact that the sample of farmers chosen were those who belong to farmer groups and they regularly meet with the extension officers at the same time and frontline extension officers are obliged to meet farmers at least once a week. Most of the frontline extension officers also reside within their areas of work which makes them very accessible to the local farmers unlike research officers who stay at the research station. The very low farmer-research contacts can be attributed to the unwillingness of the rest to engage with farmers on the researchers' side.

Most of the researchers showed some elements of surprise when the question of meetings was asked. During the interviews, most researchers highlighted that their core business is to generate new information, research on farmers' problems that they get through extension officers and disseminate the solutions and other new technology through extension whom they expect to transfer the new technology to the farmers. Researchers also reported that they have very constrained budgets which make them almost immobile. They do not have enough vehicles to use, they do not get enough fuel supplies, no computers, printers, and other stationery to use. All these shortfalls limit their proper execution of duties.

5.2 Communication channels used by farmers and the research and extension officers.

Communication is key to any successful farming business and it can provide a good measure of the type of linkage that exists amongst these three stakeholders. Farmers and officers were asked to indicate which channels of communications they use mostly.

Table 2a: Farmers response to the question on communication channels used.

	Extensionists		**Researchers**	
Communication channels	**frequency**	**%**	**Frequency**	**%**
Yet to communicate	0	0.00	714	79.33
No direct communication	596	66.22	147	16.33
Cell phone calls	121	13.44	16	1.78
Cell phone sms	36	4.00	1	0.11
By word of mouth	147	16.33	0	0.00
Email	0	0.00	0	0.00
Twitter	0	0.00	0	0.00
Facebook	0	0.00	0	0.00
Total	900	100	877	100

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This multiple response question and possible answers revealed the following: A total of 66.22% and 16.33% of the farmers concurred that there is no direct communication between them and the extension and research officers respectively (Table 2a). However 79.33% of the farmers agreed that they have not yet communicated with the research officers from NES either directly or even indirectly through their group leaders. A total of 13.44% and 1.78% of farmers agreed that they use cell phone calls to communicate with extension and research officers respectively (Table 2a). A total of 16.33% of the farmers indicated that they use word of mouth to communicate with extension officers. The use of internet based communication channels such as emails, twitter, and Facebook is non-existent. The overall picture shown above indicates that there is very little communication between farmers and researchers while there is better communication between farmers and extension officers. This may reflect a very weak linkage structures between farmers and researchers. It is very difficult to imagine a formal linkage structure between farmers and researchers when 79% of the farmers have never communicated with their research officers.

Table 2b: Research and extension officers response to the question on communication channels used.

	Extensionists		**Researchers**	
Communication channels	**frequency**	**%**	**Frequency**	**%**
Agricultural shows	11	16.92	2	11.76
Cell phone calls	9	13.85	4	23.53
Weekly meetings	8	12.31	1	5.88
Word of mouth	7	10.77	1	5.88
Every fortnight	6	9.23	0	0.00
Cell phone sms	6	9.23	1	5.88
Annual meetings	5	7.69	0	0.00
Monthly meetings	5	7.69	0	0.00
Half yearly meetings	3	4.62	0	0.00
Leaflets	3	4.62	5	29.41
Newsletter	2	3.08	3	17.65
Total	**65**	**100.00**	**17**	**100.00**

Agricultural shows came out as the most popular communication channel with 16.92% on the extension officers' side but it came forth on the researchers' side with 11.76%. Cell phone calls came second in terms of usage to both extension and research officers with 13.85% and 23.53% respectively. Weekly meetings came third and fifth as the most used channel with 12.31% and 5.88% by extension and research officers respectively (Table 2b). Interestingly, leaflets come out first on the researchers' priority channels list with 29.41% but it came tenth out of the eleven listed channels on the extension officers' list with just 4.62%. Newsletters were the third (17.65%) most preferred researchers' communication channel while on the other hand it came out as the least used channel by extension officers with just 3.08% of usage (Table 2b). The results confirms that research officers from NES do not hold any fortnightly, monthly, half year or even annual meetings with the farmers.

Farmers never mentioned agricultural shows, leaflets, and newsletters as part of their communication channels (Table 2a). May be it has been long time ever since they got hold of any leaflets and newsletters that they forgot to include them as a means of communication. Since the research station serves the whole district and even beyond it is very likely that they

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may have not got hold of any publications in a long time. The other reason could be the limited resources that the research department has which may be affecting their potential to work to their maximum, however it is very difficult to imagine the existence of a proper linkage structure were people communicate mostly through leaflets, cell phone calls and even agricultural shows are held once a year. There is also very little engagement during agricultural shows, most of the time is set aside for exhibitions, judging and awarding of prizes. Judging from the results of the survey, one may begin to believe that no formal linkage structures are in existence amongst these three stakeholders. The levels of communication that are expected in formal institutional linkage structures seem to be far from those depicted in the community of Nyanga.

5.3. Institutional working relationship and the strength of linkages according to farmers, researchers and extension officers respondents

Generally how would you describe your institutional working relationship with researchers from NES and AGRITEX extension workers was the question poised to the farmer respondents? Similarly research and extension officers' question was: How would you describe your institutional working relationship with farmers? The second summative question to the farmers was: How would you describe the strength of the linkage between researchers from NES and your AGRITEX extension officers. Similarly research and extension officers' question was: How would you describe the strength of the linkage between researchers from NES and AGRITEX extension officers and the farmers?

(a) Working relationship

Farmers as well as research and extension officers' response to the first question on working relationship was elicited on a 4-point scale of very poor to very good. Tables 5.3 and 5.4 below show their response to the question.

Tables 3: Farmers' perceptions of the overall institutional working relationship with NES researchers and AGRITEX officers

Farming		**Researchers from NES**					**AGRITEX extension officers**				
Cluster		**1**	**2**	**3**	**4**	**Total**	**1**	**2**	**3**	**4**	**Total**
Sedze	n	55	3	2	0	60	0	1	15	44	60
	%	91.67	5	3.33	0	100	0	1.67	25	73.33	100
Weaving	n	38	3	3	1	45	0	1	7	37	45
	%	84.44	6.67	6.67	2.22	100	0	2.22	15.56	82.22	100
Manjoro	n	23	7	11	4	45	0	2	15	28	45
	%	51.11	15.57	24.44	8.89	100	0	4.44	33.33	62.22	100

Scale 1-very poor, 2-poor, 3-good, 4-very good.

Results from Table 3 shows that the majority of the farmers in all the three clusters rated their institutional working relationship with researchers from NES as very poor, 91.67% (55) from Sedze cluster, 84.44% (38) and 51.11% (23) from Weaving and Manjoro clusters respectively. The cluster differences shown above were significant (Fisher's exact test P=0.0000), farmer respondents from Sedze showed so much more displeasure in their working relationship with NES researchers than those for Weaving and Manjoro clusters.

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Some positive working relationship with NES personnel was highlighted by just over 30% of the farmer respondent from Manjoro cluster (Table 3).

Researchers from NES indicated that they have recently established some organic pesticides trials in Manjoro and Weaving clusters. The just above 30% of the farmer respondents from Manjoro could be representing these few farmers who are working with the NES personnel. Results from Table 5.3 shows that farmers from all the three clusters continued to show satisfaction in the work of extension officers as 73.33% (44) from Sedze, 82.22% (37 respondents) from Weaving and 62.22% (28 respondents) from Manjoro all rated their farmer-extension working relationship as very good and Fisher's exact test P=0.2456 indicated that there was no significant difference within the three clusters in their levels of satisfaction.

Tables 4: Research and extension officers rating of the overall institutional working relationship between themselves and the farmers

Rating	**Extensionists**		**Researchers**	
	n	%	n	%
Very Poor	-	-	-	-
Poor	-	-	-	-
Good	2	17	4	67
Very good	10	83	2	33
Total	12	100	6	100

Neither the researchers nor the extension officers rated their institutional working relationship with the farmers as very poor or poor, all their ratings were very positive as it was either good or very good (Table 4). However a Kruskal-Wallis Test statistic =61.05; P-value=0.0000 confirms this huge significant differences in the researchers and farmers responses to this question. A total of 83% of the extension officers rated their extension-farmer working relationship as very good while 67% of the research officers rated their research-farmer relationship as good (Table 4). Farmers, who are the recipient of the services rendered by research and extension officers, do not share the same sentiments with them. In a well linked structure, all the concerned stakeholders are expected to be aware of their own roles as well as common or shared roles with their partners (Düvel, 2005). A poor working relationship especially shown by the farmer-research side do not suggest the existence of any viable farmer-research linkage. Unlike the research-farmers side which indicated some significant differences, the extension-farmers side was not significantly different (Kruskal-Wallis Test statistic =4.87; P-value=0.0877).

(b) Strength of linkages

The second summative question to the farmers was: How would you describe the strength of the linkage between researchers from NES and your AGRITEX extension officers. Similarly research and extension officers' question was: How would you describe the strength of the linkage between researchers from NES and AGRITEX extension officers and farmers. Their responses on a four-point scale from non-existent, minimal, fair and good are presented in Tables 4 and 5 below.

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Table 5: Farmers' rating of the strength of the linkage between them and research and extension officers

Farming Cluster		Researchers from NES					AGRITEX officers				
		1	2	3	4	Total	1	2	3	4	Total
Sedze	n	57	2	1	0	60	0	2	9	49	60
	%	95	3.33	1.67	0	100	0	3.33	15	81.67	100
Weaving	n	38	4	2	1	45	0	1	3	41	45
	%	84.44	9.00	4.44	2.22	100	0	2.22	6.67	91.11	100
Manjoro	n	22	13	5	5	45	0	2	7	36	45
	%	48.89	28.89	11.11	11.11	100	0	4.43	15.57	80	100

Scale: 1- non-existent, 2-weak, 3-fair and 4- good

A total of 95% (57) and 84.44% (38) of the farmer respondents from Sedze and Weaving clusters respectively reported non-existence of any institutional linkages with researchers from NES (Table 5.5). Even in the Manjoro cluster, most of the farmer respondents, 22 (48.89%) also indicated non-existence and weak linkage structures between them and the researchers from NES and this cluster difference was significant (Fisher's exact test P=0.0000). However, Manjoro cluster has more people who reported fair and good (11.11%) structural linkages with researchers than both Sedze (1.67%) and Weaving (4.44%) clusters (Table 5).

The findings of Hanyani-Mlambo (2002) who reported that many stakeholders perceive no clear-cut lines between what can be considered a formal linkage and what can be considered an informal network are also evident here. Contrary to the displeasure of non-linkage between them and the research officers, farmers had something positives to report on the strength of linkage between them and the AGRITEX officers. A total of 41 respondents (91.11%) from Weaving, 49 respondents (81.67%) from Sedze and 36 respondents (80%) from Manjoro concurred that there is a good farmer-AGRITEX linkage with no significant cluster difference to this view (Fisher's exact value P=0.6162) (Table 5). The fact that AGRITEX extension officers stays with the farmers within their villages and that they are always available when they need then could have prompted the farmers to report this way.

Table 6: Research and extension officers' rating of the overall strength of linkage between them and the farmers

Rating	AGRITEX officers						NES researchers					
	NES-AGRITEX		NES-farmers		AGRITEX-farmers		NES-AGRITEX		NES-farmers		AGRITEX - farmers	
	n	%	n	%	n	%	n	%	n	%	n	%
Non-existent	4	33.33	7	58.33	1	8.33	0	0	0	0	0	0
Weak	4	33.33	4	33.33	0	0	1	16.67	0	0	0	0
Fair	3	25.00	1	8.333	1	8.333	3	50.00	2	33.33	1	25
Good	1	8.333	0	0	10	83.33	2	33.33	4	66.67	3	75
Total	12	100	12	100	12	100	6	100	6	100	4	100

Table 6 show that the majority of extension officers summed their extension-research linkage up as non-existent (33.33%) and weak (33.33%). This may suggest that the joint planning and steering committees that were reported to be in place during the survey are mostly inactive or very weak. The majority of the extension officers (83%) described their extension-farmer

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linkage as good, the same view that was shared by the farmers themselves. However a closer analysis of the communication channels used in farmers-extension business do not support such a strong linkage structure. The responses to the linkage indicators in Tables 5 to 6 show a true reflection of how farmers and extension officers work together and from what they have highlighted, no proper linkage structures exist between them. The problem being shown in this question is a failure from both farmers and extension officers in interpreting the concept of institutional linkage (Hanyani-Mlambo, 2000). The routine work that the extension officers do is now being described as a good linkage structure.

A total of seven (58.33%) extension officers judged the NES-farmer linkage structure as 'non-existent' with a further 33.33% sharing the opinion that the linkage structure is weak. This view is in sharp contrast with the view of the research officers themselves whom 66.67% (four) and 33.33% (two) described their NES-farmer linkage structure as 'good' and 'fair' respectively (Table 6). Judging from the linkage indicators that were highlighted during the survey, it is clear that a good NES-farmer linkage structure does not exist. Even the frequency of meetings and the communication styles depicted earlier do not support such a strong linkage structure. Lack of understanding of the linkage concept on the side of researchers is again being highlighted here. However the other possible reason for such responses from researchers could be due to the fact that they do not want to be seen as not working hence they report good linkages even if it does not exist. Researchers also gave opposing views to those of their extension officers counterparts on the NES-extension linkage, were 50% (three officers) and 33.33% (two officers) of research officers from NES claimed 'fair' and 'good' linkage (Table 6). A smaller percentage of 25% (3) and 8.33% (one) of extensionists shared the same view with them respectively.

This continues to show a clear indication of the lack of understanding of the linkage concept amongst the research and extension officers. It also supports the claim made earlier on of a very weak and non-functional NES-extension joint planning and steering committees. The researchers also rated the AGRITEX-farmers linkage as good, 75% (three) reported that this linkage is good with one of them indicating that the linkage is fair. On the other hand, the majority (58.33%) of AGRITEX extension officers view the NES-farmers linkage as 'non-existent'.

6 CONCLUSIONS AND RECOMMENDATIONS

6.1 CONCLUSIONS

There is poor communication among the three stakeholders in this set up, especially the farmer-research side. The same applies to the trend of meetings that currently exist in Nyanga district. Proper structural linkages will not survive when meetings are held once in six months between researchers and the farmers, and relying on agricultural shows, newsletters and leaflets will not sustain any proper structural linkages that can ultimately drive sustainable agricultural development.

There is a poor farmer-extension and non-existent farmer-research linkages with no communication of progress, successes and failures in their farming programs. There is some reluctance or unwillingness on the part of researchers to engage farmers in their work. There were conflicting reports from what the research and extension officers reported that they are doing and what the recipients (farmers) reported to be receiving. A closer analysis of the two contrasting reports highlighted some severe lack of understanding of the concept of linkages

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within the research and extension officers. The results of the study indicated that there is a good working relationship between farmers and extension officers. However researchers also reported to be having a good working relationship with the farmers but the farmers themselves described this relationship as weak.

6.2 RECOMMENDATIONS

The non-existent farmer-research linkage needs to be addressed and the very poor farmer-extension and research-extension needs total revamp. There is a need to make use of the non-functioning joint planning and steering committees that are in existent between research and extension officers. There should be more collaboration to ensure efficient use of limited resources and more effective intervention programmes. This calls for government to take centre stage in facilitating these coordination functions, through legislative, mandatory, financial, and other tools (Hanyani-Mlambo, 2002). Mutual respect of one another's' profession should be fostered to improve the ultimate goal of fostering working together.

The non-existent farmer-research linkage can be strengthened if researchers consider themselves as equal partners with farmers and extension officers in the process of problem identification, problem conceptualisation, planning and implementation as well as monitoring and evaluation. The researchers need to be assisted through training so that they do not continue to regard extension officers as transmitters of already made solutions and farmers as mere users of already made solutions. Training and improved financial support can be used to transform the weak farmer-extension and research-extension linkages into proper formal linkages through provision of technical resources, creating stable communication channels, establishing regular discussion forums, providing 'hands-on' practical sessions, holding social functions, holding regular meetings and annual conferences.

Researchers are encouraged to be more active, more participatory in their nature of doing business with the farmers, they should view them as equal partners and not mere recipients of already made packages, improve on communication with their farmers especially those who are closer to their station were not much financial resources are required.

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